

MORE EVIDENCE FOR ENNEATONISM IN OLD-BABYLONIAN MUSIC

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*Au fond, il n'y a pas, il ne peut pas y avoir, de théorie modale, ni de théoriciens.
La modalité est un fait.**

Abstract

Since 1987, as recorded in my extensive exchange of letters with the late Professor Oliver Gurney (1911-2001) (for the most in the possession of Professor John Curtis Franklin), I have argued that the construction of Old-Babylonian music theory rested on a purposive palindromic enneatone, or on a series of nine pitches arranged symmetrically, prior to becoming heptatonic during the Neo-Babylonian period. This hypothesis has been widely contested although three significant cuneiform texts unequivocally attest of nine pitch sets during a period of two millennia and even spreading onto the Common Era with its continuation into Oriental Christianity.

The new evidence put forward comes from the archaic Oriental enunciation of pre-Gregorian chant, or 'archaic modality', as defined by the late Dom Jean Claire¹ (1920-2006). This archaic Oriental enunciation rests on a structure similar to the Mesopotamian model.

Introduction

Prior to ploughing into the sparkling matter of epistemic rationality where beliefs should amount to a number of ideals such as coherence with 'rules of logic', 'with axioms of probability', and with 'rules of evidential proof', the nature of concept is one which must first be addressed. From the small corpus of texts available, there is no evidence that Mesopotamian musicians during the Old-Babylonian had yet rationalised a concept of theory for music, whether as art or as science.

*There is no, there can be neither modal theory, nor theoreticians. Modality is a fact. Henry Potiron, 'Théoriciens de la modalité', in *Etudes grégoriennes* 8 (1967), p. 36.

1. http://www.musimem.com/dom_jean_claire.htm

The problem with heptatonism

Without the probative evidence of a concept, there cannot be a construction since a construction is a concept, and heptatonism is a conceptually-dependant construct. It is not something which just happens *ex nihilo* as many seem to believe. Neither is it something imprinted in our unconscious although the premise had been advanced on some occasions, one of which during a conference at Oxford where a reputable scholar claimed, in *orbiter dictum*, that mankind was born with diatonism fitted ‘as standard’ into the unconscious.

Psychogenesis of sound-syllables

Music was not born. Neither was language. Both came bound to one another as *sound-syllables*, from the deepest rifts where the entwined roots of Darwin’s tree held onto the rugged particles of human evolution. These *sound-syllables* were intangible for they came from the mouth, yet unwritten for hundreds of thousands of years to come. Initially they would have been the respons to a stimulus. A caress, for instance, provoking a basic *sound-syllable* from the recipient which in turn would become the recipient’s expression for an amorous fondle or the like. It was probably the manner or the mood of the intonation which eventually distinguished *sound-syllables* of the respons from *sound-syllables* of the request. There would have been reflexive *sound-syllables* coming from an exclamation at the sight of some ferocious animal. In some cases, the exclamation became the word for that animal. Other *sound-syllables* would have come from onomatopoeiae, such as the hissing of a snake, as signifier, and the sinusoidal shape of the snake, the signified. There would also have been polygenetic *sound-syllables* such as the ubiquitous barking of a dog, so would have been cries of pain, of pleasure, of bodily functions and others common to humankind. Thus, *sound-syllables* arose, psychogenetically, from the long-gone soundscapes whence we dwelled.

A-theoretical musicology

Neither music nor language need any rules and evolved at the pace at which human species concurrently developed satisfactory ears to listen and adequate vocal folds to receive and emit *sound-syllables*. We heard what we voiced and voiced what we heard. Thus, the claim that a heptatonic diatonic theory flourished at the dawn of

Mesopotamian cultural societies is all but fanciful as a society builds up rules only when it incrementally becomes cognitively able to apprehend the concept of civilisation, a difficult task when such societies have no paradigm from which to start. Thus societies evolved organically and conceptually established the rules it needed to function.

The diverse layouts of pitches came from the manner in which *sound-syllabic* melodies stemmed from the synchronisation of culturally collective rhythmical *sound-syllables* as known from ethnomusicology. Most ethnic societies share spontaneous rhythmic *sound-syllabic* enunciations induced under the form of similar impetuous emissions arising from collective stimuli.

Ex nihilo fit

Ethnic melodies emerge from the succession of a few contiguous pitches usually gravitating around a tonal centre or nucleus. Usually the intervals between them are around the tone: 200 cents plus or minus or up to 50 cents. There are recurring patterns of two contiguous pitches followed by an approximate trihemitone as it appears that the natural voice tends to favour this succession. There is also preference for chains of thirds and for intervals of neutral thirds and seconds as defined by Abou M'rad's² significant works on modal semiotics. If thousands of ethnies follow similar patterns, each of their *sound-syllabic* expressions remains typical of the identity of their groups for it is the organisation of these *sound-syllabic* patterns with which these melodies are enunciated, which shape the typicality for each of these ethnies thus allowing for their distinctiveness.

Spontaneous intonation in children's improvisations

Young children's musical improvisations bear some similarity with melodic patterns in certain ethnies. Curt Sachs³ wrote that 'it is exciting experience to learn

2. Nidaa Abou M'rad³ wrote that that '...phenomena linked to acoustic otoemissions places a selective hierarchisation at the core of the neurosensorial auditory system favouring a natural transduction of the interval of the third and concludes that this preference would constitute a natural melodic perception for the neutral third which divides the just fifth in two equal parts rather than in two unequal parts, the major and the minor thirds.' Significantly, young children tend to sing neutral thirds spontaneously as they are not yet in need of differentiation between the major and the minor. See Abou M'rad, N., *Éléments de Sémiotique Modale, Essai d'une grammaire musicale pour les traditions monodiques*. Les Éditions de l'Université Antonine, (2016). Tous droits réservés. Université Antonine, Hadath-Baabda, Liban. Les Éditions Geuthner, 2016 Tous droits réservés. S.N. Librairie Orientaliste Paul Geuthner S.A.

3. Sachs, C. The Rise of Music in the Ancient World (New York, 1943), pp. 43-44.

that the earliest known stage of music reappears in the babble songs of small children[...]. For once the ontogenetic law is fully confirmed: the individual summarizes the evolution of mankind. These children could not be suspected to have been influenced by a single trait of our own music. Thus we cannot but accept their babbling as an ontogenetic reiteration of man's earliest music and, inversely, conclude that the music of today's most primitive peoples is indeed the first music that ever existed.'

I should not be as enthusiastic as Sachs in his understanding of ontology since these children would have been influenced by their parents' own music, would it be during their intra-uterine sojourn and by soundscapes, whatever they might have been, urban or rural, but it is certain that they must have been a part of influence as these children would not have been conceived and developed in sound sterility. Bruno Nettl⁴ mentioned Jakobson's remarks⁵ about the relationship between infants' linguistic developments and the distribution of phonemic distinctions throughout the world. In his paper, he examined the possibility of similar relationships in music. Jakobson believed, and demonstrated, that phonemic distinctions which are most common in the languages of the world also appear earliest in children's speech, for example, the distinction between vowelised and consonantal music. Heinz Werner⁶ concluded on the various stages of musical development which are based entirely on created improvisations of children but not on the way in which they handled songs they were taught. About form, the study showed a preference for simple repetition of single short phrases with slight unsystematic variations, followed by short strophes made up of two, three or four phrases with little variations. About rhythm, the only characteristic type is a series of notes of equal length followed by a longer final. The melodic contour was preferentially descending. The favoured intervals, although imprecise, were minor thirds and major seconds, major thirds and minor seconds followed by neutral thirds; then intervals smaller than half-tones, and quarter-tones, then larger intervals starting with a fourth. The ambitus was of two tones in preference to three and four and the less favourite of more than four tones.

4. Nettl, B., (1930-2020), *Infant Musical Development and Primitive Music* published in *Southwestern Journal of Anthropology*, (New Mexico, 1956).

5. Jakobson, R., *Kindersprache, Aphasie und Lautgesetze*. (1940). *Bibliografische Angaben Ersterscheinungstermin: 08.07.1969. Erscheinungstermin (aktuelle Auflage): 21.02.2010. Broschur, 143 Seiten. Print on demand 978-3-518-10330-2*.

6. Werner, H., (1890-1964), *Die Melodische Erfindung im frühen Kindesalter*, *Akademie der Wissenschaften*, Wien, *Philosophisch-historische Klasse, Sitzungsberichte* 182 (1917), no. 4.

Neurosensory preferences and the neutral third

My own observations of children's singing show a predominance for neutral seconds and thirds within dual and tritonal melodies. This is supported by Abou Mrad who writes that the neurosensory preference for thirds and the observation of phenomena linked to acoustic otoemissions⁷ which favours a selective hierarchy at the core of the neurosensory system preferring the transduction of the third, innately, while holding to acquired cognitive regulations.

Ethnomusicology and archaeomusicology

I stand aware that it is academically injudicious to compare certain aspects of ethnomusicologic seminality/primitivity with the suppositional seminality/primitivity of archaeomusicology. I would nevertheless argue that this cannot be an obdurate rule as some isolated ethnies having been spared both Occidental theoretical and practical musical contamination may have developed, in a state of musical immaculateness, allowing for spontaneous musical expressions which might have been of the same essence as the seminality or the seminality/primitivity of our earliest ancestors' musical expressions.

I - ARCHAIC 'MODALITY' OR PRE-GREGORIAN (GALLICAN) ORIENTAL ENUNCIATION

Dom Jean Claire, was a Dominican monk and eminent musicologist from the St. Pierre monastery of Solesmes. He had been in charge of the musical palaeographic workshop of the monastery since 1972 and was fully devoted to his research about what he called 'archaic modality' or 'archaic enunciation' which I would prefer since the word 'mode' does not figure in any of the earliest available Frankish-Roman manuscripts. Dom Daniel Saulnier⁸ wrote that during the second half of the eighth century AD, Roman liturgy was exported to Gaul on the request from Frankish kings and of certain bishops who were keen on a cultural and religious unification with

7. Kemp, D.T. An otoacoustic emission is a sound that is generated from within the inner ear. Its existence was first demonstrated experimentally by Kemp in 1978. Otoacoustic emissions have since been shown to arise through a number of different cellular and mechanical causes within the inner ear. The frequential ratio for the neutral third dividing the just fifth in two equal parts is precise. (Moulin, Bera et Collet, 1994, pp. 305-326.)

8. Saulnier, D., Dom, *Gregorian Chant: A Guide*, by Dom Daniel Saulnier, (2007) Paraclete Press (MA)

Rome. This decision would have resulted in ending Mediterranean liturgical practices and the extinction of ancient Gallican chants. In contradiction to many diocesan legendary tales about the foundation of the church, Gaul was not evangelised by Roman envoys but from Oriental preachers. Thus, Photin, who was the first bishop of Lyon in France, came from Phrygia while his successor, Irenee, who was a disciple of Polycarpus of Smyrna was himself, conjecturally, a disciple of John the evangelist⁹.

The merit of Dom Jean Claire was the discovery of the three archaic modes or enneatonic enunciations made up of two conjoined and identically structuralised anhemitonic pentatones.




1	G A (B \flat or B) C D E (F or F \sharp) G A;	
2	C D (D \sharp or E) F G A (A \sharp or B) C D;	
3	D E (F or F \sharp) G A B (C or C \sharp) D E.	

Figure 1. Don Jean Claire's three archaic modes or enunciations

I have hesitated in calling these archaic enunciation 'modes' and would prefer the English 'mood' which has a much more appropriate meaning although coming from the same Latin root *modus*. Furthermore, Greek authors ignored the concept and the word is unknown to their terminology.

The semitone is always avoided while the trihemitone has an important function. These enunciations include what Dom Claire called 'mother-cells' or 'mother-chords'. They directly expose the nature of the composition while the traditional eight Gregorian 'modes' have classification for only purpose. Gregorian chant did not rely on the Greek tetrachord C-D-E-F but on the intervals between contiguous pitches giving melody its distinct coloration. The three 'mother-chords' are:

G-A-C; A-C-D; C-D-E

The second 'mother chord' starts with the second pitch of the first and the third with the second pitch of the second. They end up with **C-D-E**.

In the first mother chord, the trihemitone is between degrees two and three; with

9. VOGEL, C., «Saint Chrodegang et les débuts de la romanisation du culte en pays franc », - Saint Chrodegang, actes du colloque tenu à Metz pour le douzième centenaire de la mort de saint Chrodegang, Metz, Éditions Le Lorrain, 1967, 91-109 ; «La réforme culturelle sous Pépin le Bref et sous Charlemagne (deuxième moitié du VIII^e siècle et premier quart du IX^e siècle, in Erna Patzelt, *Die Karolingische Renaissance*, Graz, Akademische Druck und Verlagsanstalt, 1965, pp. 171-242.

the second, it is between the first and the second and in the third, the three pitches are separate by ‘whole tones’.

In the three archaic enunciations, trihemitones are placed on the same degrees. Enunciation two and three are tonal transpositions. It will become significant, later in this analysis that the concatenation of the three enunciations amount to a tridecachord and so did the Greater Babylonian System from about 2000 BC.




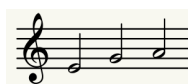
1	G A (B \flat or B) C D E (F or F \sharp) G A;	
2	C D (D \sharp or E) F G A (A \sharp or B) C D;	
3	D E (F or F \sharp) G A B (C or C \sharp) D E.	

Figure 2. Don Jean Claire’s three archaic modes or enunciations with trihemitones encircled in red

The intervals where the trihemitones (A-C) and (E-G) lie are where the dissonance B and F, *diabolus in musica*, would be placed, with resolution to consonance as either B \flat or F \sharp . This *diabolus in musica* is not a tritone (204x3=612cents) but it is a diminished fifth = 588 cents which would have been considered a dissonance.

Origins of the archaic enunciation

The first anhemitonic pentatone (G-A-C-D) and the second of the first enunciation (D-E-G-A) have similar structures. The second part as a transposition of the first at a fifth above. These structures are frequent in ethnomusicology. Annie Labussière¹⁰ analysed a song of the Chukchi group from Northern Russia, recorded by Céline Gueunoun, where the melodic cell sits on a G around which gravitates the lower trihemitone E and the upper tone A (Example 1). Another song from Aka Pygmies collected by Simha Arom is sung by children (Example 2). Another melody from New Mexico Navajo Indians, collected by Laura Boulton (Example 3) has two trihemitones around a tone. Another from the Banda Linda group, collected by Simha Arom (Example 4) is characteristic of the third archaic enunciation.



Example 1



Example 2



Example 3



Example 4

10. Labussière, A., <https://www.musimediane.com/3labussiere/>

Thus, pre-Gregorian (Gallican) Oriental archaic enunciation would not have come from any theory. The enunciations revealed by Dom Jean Claire came from the natural propensity for the usage of a trihemitone following a series of one or two contiguous tones, in order to avoid the semitone which would have been difficult to place in a monody. This would explain what we later called pentatonism and its extension to an anhemitonic enneatone labelled as the first archaic ‘mode’ by Claire. While it is highly probable these archaic forms remained an oral expression devoid of any theory, and that the cells (G-A-C-D), (D-E-G-A), etc., would have been naturally enunciated, it is possible to analyse, *a posteriori*, the enneatone and propose the following:

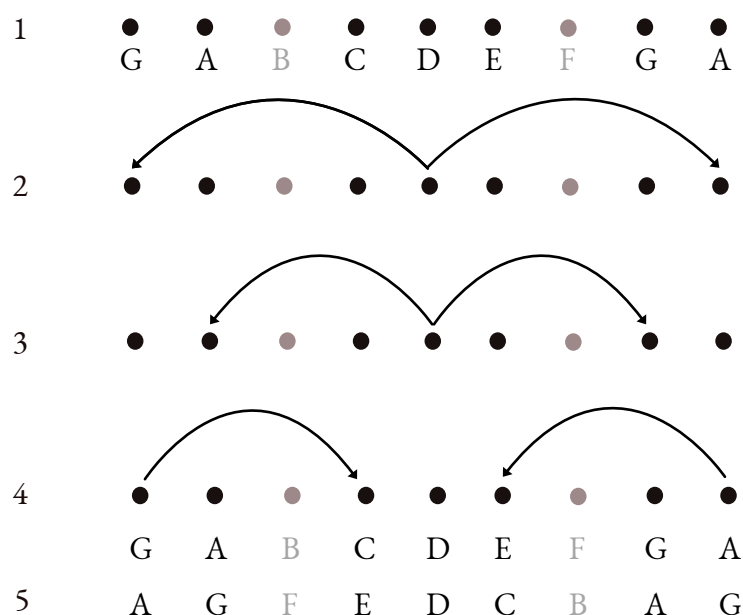


Figure 2. hypothetical construction of the enneachord, or of an anhemitonic construction spanning the enneatone.

Line 1 gives the pitches of the first enneatonic set. The pitches located within the trihemitones A-C and E-G are shown in grey. They are mobile.

Line 2 shows projections of two fifths from the pitch centre D.

Line 3 shows projections of two fourths from the pitch centre D.

Line 4 shows projections of two fourths from the boundaries of the enneatone.

Line 5 gives the inversion of the enneatone showing symmetry.

The alternations of a fifth and of two fourths lead to the structure of a pentaphonic anhemitonic system spanning the enneatone or two conjoined symmetrical anhemitonic fifths.

To conclude, the first intonation can be divided into two equivalent fifths: G-A-(B)-C-D and D-E-(F)-G-A. They came from natural intonation probably inherited from the Mesopotamian system as we shall see below. Furthermore the enneatone made from the conjoined concatenation of the two fifths leads to a structural analysis as schematised in figure 2. This became a system for the tuning of the enneatone independently from the former enunciation.

It remains that the so-called Gregorian chant never needed a theory and functioned with the orality of its archaic enunciation for many centuries. Then, later compositions during the ‘Gregorian decadence’ of the seventeenth and eighteenth centuries when plain-chant suffered from a theory alien to its original principles from which it started to recover in the nineteenth century.

II - BABYLONIAN ORIGINS OF THE ARCHAIC ‘MODALITY’ OR PRE-GREGORIAN (GALLICAN) ORIENTAL ENUNCIATION

uktin (SIG7.ALAN) = *nabnītu* xxxii. (Field number U.3011)

In his draft of a paper, Krispijn, wrote that while *nabnītu* xxxii is unequivocally a document written around 600 BC during the Neo-Babylonian Period, there are earlier Middle-Babylonian versions of this text dating from around 1000 BC, including a damaged version but most importantly, an Old-Babylonian (1800 BC) precursor (*UET* VI, 358).

MSL XVI¹¹ writes that ‘...regular sources for *nabnītu* consist of large and typical lexical tablets [...] with Sumerian and Akkadian entries. So far there is just one piece of evidence from the Old-Babylonian Period [...] The earliest regular sources appear toward the end of the second millennium BC, in both Middle-Assyrian and Middle-Babylonian copies. To date, twelve such Middle-Assyrian sources have been recovered, although most have not yet been published. All were excavated at *Aššur*,

11. *MSL*, (*Materials for the Sumerian Lexicon*) the series **SIG7.ALAN** = *nabnītu*, edited by Irving, L. Finkel with the collaboration of Miguel Civil. *Pontificum Institutum Biblicum*. (Rome, 1982). The basic manuscript of **SIG7.ALAN** = *nabnītu* used until now (1982) in *CAD* was finished about thirty years ago [in 1982] by Benno Landsberger with the assistance of J.R. Kupper. The task of preparing the manuscript for publication was entrusted to Dr. Irving L. Finkel, former Research Assistant at the Oriental Institute [Chicago] (1976-1979), Assistant Keeper of the Department of Western Asiatic Antiquities [Department of the Middle-East] of the British Museum.

with the exception of one found at *Kouyunjik* and one unprovenanced. However, most sources are Neo-Assyrian as almost all of these come from King *Ashurbanipal*'s library at *Kouyunjik* and exhibit the customary high scribal standard.'

In the history of the cuneiform lexical tradition the most important innovations of the Old-Babylonian Period is the sign list. They were widely used in scribal education. Exercise tablets with sign lists have been found by the hundreds and are known from almost all sites that yielded school tablets.

Nabnītu is a bilingual vocabulary which, like *Antagal*, *Erimbuš*, and the so-called 'Group-Vocabularies', is to be considered Akkado-Sumerian as opposed to the older Sumerio-Akkadian lexical series. *Nabnītu* stands apart from the other Akkado-Sumerian vocabularies, however, in that the two fundamental principles underlying its construction, the thematic order of the entries and the structuring of the sequences according to etymology, are not found elsewhere.

Krispijn translated the Sumerian (Figure 3) of lines 6, 7 and 8: **sa.x.a.ga.gul**, and string 9: **[sa.1]a.ga.gul.la** by: 'string x of the bigger back' and 'first string of the bigger back'. The four last string names are compound with **a.ga.gul.(la)** '(of) the bigger back' of the *sammû*-instrument which designates the strings of the back of the instrument by opposition to the first string which would be placed closest to the head of the bovine lyre.

Furthermore, *nabnītu* xxxii stands apart from the other Akkado-Sumerian vocabularies for the following reasons: 1) The Akkadian is partly but not entirely a literal translation of the Sumerian. 2) Sumerian entries are not prescriptive. They are descriptive in that they name and locate the nine strings of the lyre. 3) Sumerian lines 9 to 5 stand in symmetry with lines 5 to 1 while Akkadian lines indicate variations to the symmetry of the Sumerian.

Sumerian	Translation	Akkadian	Translation
1 sa.sa₂ (=DI)	'rival' string	<i>qud-mu- 𐎶um</i>	prime(?) (string)
2 sa.ús₂ ¹⁷	neighbouring string	<i>šá-mu-šu-um</i>	neighbouring (string)
3 sa.3.sa.sig	string 3 string thin	<i>šá-al-šu qa-a[t-nu]</i>	third (string) thin
4 sa.4.tur	string 4 small	< ^d é>-a.[dù]	Ea-the creator
5 sa.sa₂ (=DI).5!	fifth 'rival' string	<i>ḥa-am-[šu]</i>	prime(?) (fifth string)
6 sa.4.a.ga.gul	string 4 of bigger back	<i>ri-bi úḥ-ri-i[m]</i>	fourth of the rear (string)
7 sa.3.a.ga.gul	string 3 of bigger back	<i>šal-ši úḥ-ri-im</i>	third of the rear (string)
8 𐎶sa.2.a.ga 𐎶.gul	string 2 of bigger back	<i>ši-ni úḥ-ri-im</i>	second of the rear (string)
9 [sa.1] 𐎶a 𐎶.gul.la	1st string of bigger back	<i>úḥ-ru-um</i>	rear (string)
10 [9] 𐎶sa 𐎶.a	9 strings	9 <i>pi-it-nu</i>	9 strings

Figure 3. Transliteration and translation of lines 1-10 of the Neo-Babylonian text *nabnītu* xxxii

These variations in the Akkadian must be chronological variations of the system. 4) *qud-mu-um* in line 1 would be the adjective *qudmû*, meaning ‘rival’ rather than the noun. 5) Similarly, *ša-mu-šu-um* would stand for the adjective *šamušû*, ‘neighbouring’, understanding Sumerian **sa.uš** as **sa.ús**, the underlying Akkadian verb being *emēdu*. 6) Therefore *úh-ru-um* at line 9 would be the adjective *ubrû*, rather than the noun *ubrû*, ‘rear’ as found in lines 6 to 8. Figure 4, next page shows my hypothetical pitch construction. I contend that from the central pitch 5=D, two fifths were projected on each side of the axis of symmetry: 5-1 (front) = D-A and 5-1 (back) = D-G. Then two fourths were projected from the same axis: 5-2 (front) = D-G and 5-2 (back) = D-A.

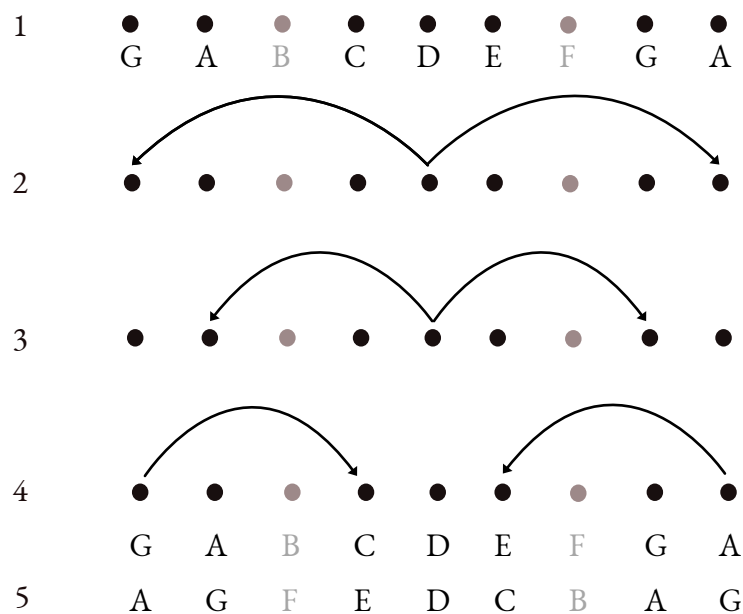


Figure 4. Hypothetical Sumerian pitch set in *nabnitu* xxxii. Note that due to the palindromic formation of the pitches, the set can be read in both direction.

Then two fourths would be drawn from the extremities: 1-4 (front) = A-E and 1-4 (back) = G-C. Then two fourths from 3-4 (front) = F-C and from 3-4 (back) = B-E.

Therefore my hypothetical reconstruction of *nabnitu* xxxii generates an enneatonic descending pitch set of a-g-f-e-d-c-b-a-g where the interval between both strings 3 would equate to a diminished fifth = 588 cents and not a tritone of 204 cents x 3 = 612cents.

There is little doubt that the archaic pre-Gregorian (Gallican) Oriental pitch set is a direct continuation of the enneatonic enunciation in *nabnītu* xxxii. The most interesting feature with the two texts is that while they reveal a spontaneous a-theoretical enunciation they also lend themselves to a construction based on the alternation of fifths and fourths.

The Babylonian name for this pitch set is *nīs tuḥri* and the interval of the diminished fifth between the pitches located within their trihemitones is called *qablītu* which means ‘middle part’ in Babylonian, a term appropriate to qualify this interval as it sits right in the middle of the system. These terms are known from another enneatonic text of theory known as U.7/80 (field number) and *UET* VII, 74¹², because it is the 74th text published in Tome VII of the Ur Excavation texts published by Oliver Gurney in 1974.

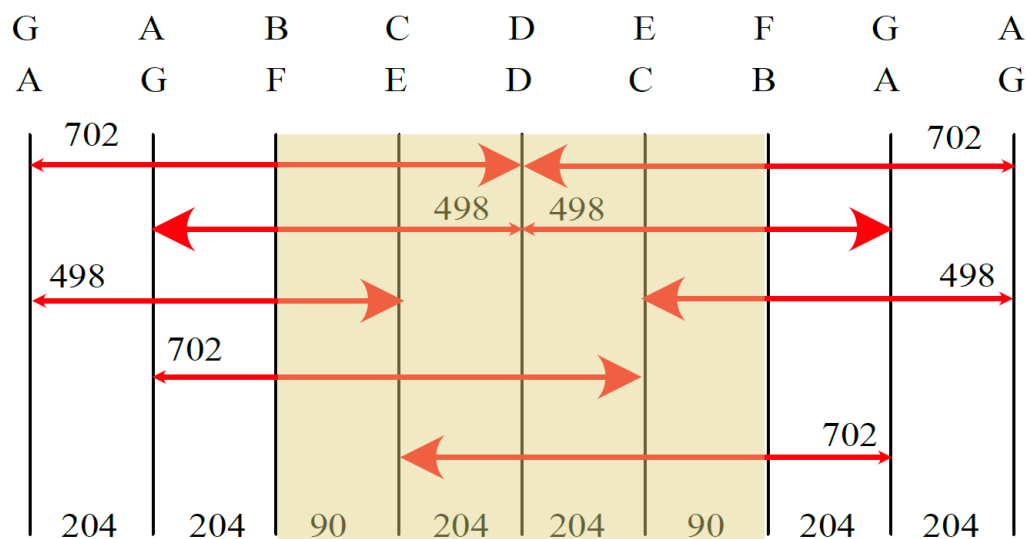


Figure 5. Quantification for both the archaic pre-Gregorian enunciation and the pitch set as extrapolated from text *nabnītu* xxxii. The ‘*qudmū-middle*’-‘*la zaku-unclear*’ zone is shaded in yellow.

12. Gurney, O.R., *Ur Excavation Texts*. Volume VII, *Middle-Babylonian Legal Documents and other Texts*. Publication of the joint expedition of the British Museum, and of the University Museum, University of Pennsylvania, Philadelphia, to Mesopotamia. Published for the Trustees of the two Museums by British Museum Publications Limited, 1974.

UET VII, 74 - Transliteration and translation

i [šum-ma ^{gis} ZÀ.MÍ pi-i-tum-ma]	i if the <i>sammû</i> is <i>pītu</i>
ii [e-e]m-b[u-bu-um la za-ku]	ii <i>embūbu</i> unclear
iii ša-al-š[a-am qa-at-na-am tu-na-sàh-ma]	iii tense third thin
iv e-em bu-bu-u[m iz-za-ku]	iv <i>embūbu</i> is clear
v šum-ma ^{gis} ZÀ.MÍ e-em-bu-bu-um-ma]	v if the <i>sammû</i> is <i>embūbu</i>
vi ki-it-mu-um [la za-ku]	vi <i>kitmu</i> unclear
vii re-bi úh-ri-im [tu-na-sàh-ma]	vii tense fourth rear
viii ki-it-mu-um i[z-za-ku]	viii <i>kitmu</i> is clear
ix šum-ma ^{gis} ZÀ.MÍ k[i-it-mu-um-ma]	ix if the <i>sammû</i> is <i>kitmu</i>
x i-šar-tum la za-[ka-at]	x <i>išartu</i> unclear
xi ša-mu-ša-am ù úh-ri-a-a[m tu-na-sàh-ma]	xi tense <i>šamuššu</i> and rear
xii i-šar-tum iz-za-[ku]	xii <i>išartu</i> is clear
xiii nu-su[hū-um]	xiii tightening
xiv šum-ma ^{gis} ZÀ.MÍ i-šar-t[um-ma]	xiv if the <i>sammû</i> is <i>išartu</i>
xv qa-ab-li-ta-am ta-al-pu-[ut]	xv <i>qablītu</i> unclear
xvi ša-mu-ša-am úh-ri-a-am te-[ni-e-ma]	xvi relax <i>šamuššu</i> and rear
xvii [^{gis}]ZÀ.MÍ ki-it-mu-[um]	xvii <i>sammû</i> is <i>kitmu</i>
xviii [šum]-ma ^{gis} ZÀ.MÍ ki-it-m[u-um-ma]	xviii if the <i>sammû</i> is <i>kitmu</i>
xix [i-ša]r-ta-am la za-ku-ta-am t[a-al-pu-ut]	xix <i>išartu</i> unclear
xx [re-bi] úh-ri-im te-ni-e![-ma]	xx relax fourth rear
xxi [^{gis}]ZÀ.MÍ e-em-bu-bu-um]	xxi <i>sammû</i> is <i>embūbu</i>

Figure 6. Transliteration and translation of text UET VII, 74.

This text dates from the Old-Babylonian period, around 1800/1750 BC. Originally the tablet would have included two columns. It is incomplete as the top, the bottom and most of the left column of the clay tablet have broken away. It was unearthed by Sir Leonard Woolley at the site of Ur in the nineteen-twenties. It is descriptive as it exhibits a musical system with great accuracy and it is prescriptive as it gives unequivocal instructions and their consequences.

The right column of the text is divided into two series of quatrains. The first verse of the first quatrain of the first series names an enneatonic pitch set. The second verse indicates two strings/pitches where lies an interval called ‘*la zaku*’, an Old-Babylonian term meaning ‘unclear’, probably meaning ‘dissonant’, as the extrapolation of the theory will qualify it as a diminished fifth (588 cents), in Occidental theory. The third verse indicates which string/pitch of the ‘dissonant’ interval should be tensed or relaxed to tune the dissonance away. The fourth verse says that the ‘dissonant’ interval is now ‘*zaku*’ meaning ‘clear’ it is no longer preceded by the negative particle ‘*la*’. As a consequence of the instructions, the second quatrain starts with a new pitch set resulting from the correction of the ‘dissonant’ interval in the last verse of the first quatrain. The verse which follows says on which strings/pitches the next ‘dissonant’ interval is placed. The next verse indicates which string/pitch should be tuned to remedy the dissonance. The last verse says that the ‘dissonant’ interval is now made consonant. The quatrains follow the same process until they reach the eighth occurrence where the resulting pitch set lands a ‘semitone’ higher than the first one. This is where the second series starts and consists in quatrains reverting in symmetry to the first one¹³.

This text explains the construction of eight pitch sets which might have been the forerunners for the catalogue of the eight ‘Church Modes’ where each set starts on each of the degrees of the generative set.

CBS 10996: GENERATION OF THIRDS AND THEIR CONCATENATION INTO FIFTHS

CBS 10996 dates from the middle of the first millennium BC. It locates a series of paired numbers to which names are given. The series of numbers is (1-5) (7-5) (2-6) (1-6) (3-7) (2-7) (1-4) (1-3) (5-2) (2-4) (6-3) (3-5) (7-4) (4-6). It goes without saying that these numbers address to a heptatonic arrangement since the numbers do not go beyond seven. The irregularity of the sequence evokes a restitution of what would

13. For further reading about text UET VII, 74, see Dumbrill, R., *Semitic Music Theory from its earliest sources till the dawn of Christianity*. ICONEA publications (2019), (https://www.iconea.co.uk/_files/ugd/eb4136_3d0e3b0bc1c84fa49ef0b39601fcd24.pdf); *Seven, yes but... or the Truth about Babylonian Music Theory*. (https://www.iconea.co.uk/_files/ugd/eb4136_9b7565980b5f42169e5c8a536b6a5454.pdf); *Posteriorism and Old-Babylonian Musicology*. (https://www.iconea.co.uk/_files/ugd/eb4136_5128ac2114f948f7838f999a4f40d9a8.pdf); *The Birth of Music Theory* (https://www.iconea.co.uk/_files/ugd/eb4136_7db5b21819fe428fbbf8f84eb5559dcf.pdf);

have been the original sequence of the paired numbers where the figures extend to thirteen: (1-5) (7-5) (2-6) (8-6) (3-7) (9-7) (4-8) (10-8) (5-9) (11-9) (6-10) (12-10) (7-11) (13-11). This restored series reveals two types of intervals: seven primary intervals (thirds) and seven secondary intervals (fifths).

This text seems to agree with my explanations in the introduction of this paper about sound-syllabic psychogenesis; a-theoretical musicology; spontaneous children's intonations; neurosensory preferences and the neutral thirds; ethnomusicology and archaeomusicology.

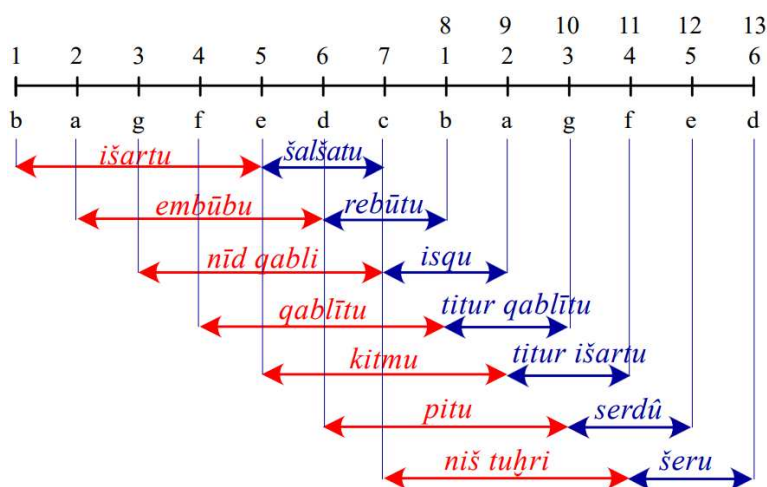


Figure 7. Linear representation of the seven degrees of the heptachord in CBS 1766 in relation to the tridecachord extrapolated from CBS 10996 mentioned earlier, showing the compatibility between both systems, the numeral and the intervallic. Primary intervals in blue and secondary intervals in red.

YBC 11381: Neo-Babylonian Enneatonism

This Neo-Babylonian text in the Yale Babylonian Collection by is certainly one of the most significant additions to the corpus of music theory for the past fifty years. The text lists 9 strings/pitches each line beginning with an incipit:

Obv.	[sa] 1 ¹ an.šár 1 ^l ugal dingir ¹ meš be-lut-ka li-dam-mi-iq ka-a-ši 2 ^d 15 ba-na-at te- 1 ^{né-šit} 1 ^{tu-ub} lib-bi u la-ba-ri ka-as-ši liš- 1 ^{ruk} -ka Sig da-ar!-gal kak-ku
5	sa 3 1 ^d ara.gal 1 ^g istukul ez-zu-tú u ₄ -mu na-al-bu-bu liš-tam-1 ^h ir-ka [(x)] en du qa-at sa 4 1 ^d en ¹ 1 ^{ki} . dù 1 ^d gašan 1 ^d lamma pa-ti-qat dam-qá-a-tú la-mas-si bu-un-(ni) gi-ir
	sa 5 1 ^d 1 ^{dam.ki} .an.na 1 ^{tés-lit-ka} 1 ^{šu-le-e-ka} u la-ban ap-pi-ka liš-tam-gir ana en.en en- 1 ^{da-šu} -ru-um ri-ib
10	sa 6 1 ^d en.da. 1 ^š urim.ma mi ¹ -lik-ka nak-lu a-ma-tu-ka aq- 1 ^{ra} -a-tú liš-taq-rib u ₄ -mi-šam šá-am
	sa 7 1 ^d en.du ₆ .kù.ga 1 ^{ki} -bi-is šul-mi u pa- 1 ^{dan} -nu liš-tak-kan ana ši- 1 ^{kin} gir ¹¹ -ka ME sa 8 1 ^d en.u ₄ .ti.la 1 ^{hi-šib} tuḫ-du u 1 ^{hé.gál-lu₄} liš-tak-kan ana me- 1 ^{rit} érin ^{me} -ka ¹ me-ri-tú
15	sa 9 1 ^d en.me.šār. 1 ^{ra} il-lat rag- 1 ^{gi} -ka u 1 ^{za-ma-ni-ka} li-šab-bir li-sap-pi-iḫ 1 ^g istukul za- ¹ i-ri ¹ -ka
rev.	ana ka sar ana 1 ^{tu-ub-bi} na- 1 ^{as} -1 ^{hi}
le.e.	šal-šú uḫ-ri

Figure 8. Transliteration of text YBC 11381 by Elisabeth Payne, Yale.

Translation:

sa 1	May Aššur, the king of the gods, improve your dominion for you. c-b ^b -a-g-f-e-d-c-b ^b
sa 2	May Ištār, who created mankind, grant you well-being and longevity. c-b-a-g-f-e-d-c-b
sa 3	May Daragal make you rival the fierce weapon (s and) the raging storm. c-b-a-g-f [#] -e-d-c-b
sa 4	Enkidu, treat kindly the Lady, the protective spirit who created good things, the <i>lamassu</i> . c [#] -b-a-g-f [#] -e-d-c [#] -b
sa 5	May Damkianna make your appeal, your prayers, and the stroke of your nose always pleasing to the lord of lords. c [#] -b-a-g [#] -f [#] -e-d-c [#] -b
sa 6	May Endašurimma present your artful advice and you precious words daily. c [#] -b-a-g [#] -f [#] -e-d-c [#] -b
sa 7	May Endukuga always let your footstep fall on a prosperous road and a smooth path. c [#] -b-a [#] -g [#] -f [#] -e-d-c [#] -b
sa 8	May Enudtila constantly establish abundance, plenty, and prosperity for the pastures of your people. c [#] -b-a [#] -g [#] -f [#] -e [#] -d-c [#] -b
sa 9	May Enmešarra crush the forces of those who wrong you and of your enemies. May he scatter the weapons of your adversaries. c [#] -b [#] -a [#] -g [#] -f [#] -e [#] -d-c [#] -b [#]

Figure 9. Translation of text YBC 11381, by Elisabeth Payne, Yale with hypothetical notation, thetical and dynamic, for each of the seven incipits in YBC 11381. These enneatonic pitch sets have been extrapolated from text U.7/80 by Richard Dumbrell and can be transposed.

The text lists nine strings. Each string number is followed by an incipit. The nine strings are known from the aforementioned texts *nabnītu* xxxii = *UET* VII, 126 and with U.7/80 = *UET* VII, 74. Unlike their disposition in the two aforementioned texts where the nine strings of the ^{gis}**ZÀ.MÍ**-instrument are listed, palindromically as 1-2-3-4-5-4-3-2-1, from Old-Babylonian to Neo-Babylonian, a period of about 1500 years, *YBC* 11381, which is Neo-Assyrian, has them listed sequentially as 1-2-3-4-5-6-7-8-9.

I contend that the nine ‘sa’ were no longer used exclusively for listing strings/pitches *per se* but were used as a form of determinative preceding each of the nine enneatonic scales.

Conclusions

Insofar as we would agree to a relationship of similarity between text *nabnītu* xxxii and the archaic ‘modes’ as discovered by Dom Jean Claire, it could be argued that because a thousand years or so separate the most recent version of *nabnītu* xxxii from the first attestation of the archaic ‘modes’, it would be unlikely that the two were related. However I would put it that if at least two thousand years separate the oldest concept of *nabnītu* xxxii from its latest version, the former argument would be flawed as if a concept having lasted two thousand years or more from the time of its written inception and with the assumption that a pre-literate enunciative forerunner existed for centuries if not millennia before, it would be very likely that it lasted another thousand years up to the earliest archaic ‘modes’, and a further millennium and a quarter to this day.

A precursor of the archaic model would have come from the concatenation of human physical aptitudes floating on an underlying psychogenetic stratum which would have turned into theory when the conceptual epistemology emerged from the socio-cultural environments of the first city-states. Concepts are pertinacious and survive the erosion of time. This is why some have confused their longevity with the hypothesis that it all came from the unconscious, *ex nihilo*.

Additionally, the first evidence of heptatonism is attested, conclusively, with Neo-Babylonian text *CBS* 1766¹⁴ written around six hundred BC and which is still an active and predominant concept alongside other more complex systems two and a half thousand years after its earliest attestation.

The practice of archaic ‘modes’ from the first centuries of Christianity constitutes evidence of an Oriental influence rather than Greek.

14. Dumbrill, R., The earliest evidence of heptatonism in a late Old Babylonian text: *CBS* 1766. https://www.iconea.co.uk/_files/ugd/eb4136_b26fb72083f84141ac956c5da19d3c1e.pdf